Testing for Differences across Genders: A Replication of Ultimatum Game at International Islamic University, Islamabad

HASAN, HAMID and EJAZ, NAUMAN

10 March 2013

Testing for Differences across Genders: A Replication of Ultimatum Game at International Islamic University, Islamabad

Hamid Hasan[1] and Nauman Ejaz[2]

Abstract

The paper attempts to test the following hypotheses: (i) Are people generally self interested, (ii) If people tend to be generous, what is the motive, i.e., either they fear rejection or do they have a preference for fairness, and (iii) Is there any behavioral difference in bargaining between males and females.

In this respect, we conduct an ultimatum bargaining experiment in a "same gender pairings" setting in International Islamic University Islamabad, Pakistan. In order to test the first hypothesis we look at the overall offers made by the proposers and the rejection rates of the responders. In order to test the second hypothesis we compare the offers that proposers anticipate will be accepted by the responders and the offers they actually make. If actual offer exceeds the minimum acceptable offer anticipated by the proposer, we conclude that he is fair minded. Otherwise, he is being generous due to fear of rejection. In order to test the third hypothesis, we compare the offers and responses made by males and females in this game.

At the start of this study, we were of the view that the people of an Islamic society, in general, and students of International Islamic University, Islamabad, in particular, would show a greater concern for fairness rather than fear of rejection. As is evident, the results of this study prove these views wrong. Further, this fear of rejection was very realistic, particularly, in case of males where the rejection rates for unfair offers were very high.

[1] Assistant Professor, International Institute of Islamic Economics, Islamabad, Pakistan.

[2] Lecturer, International Institute of Islamic Economics, Islamabad, Pakistan.

Regarding gender differences, we have found females to be more generous than males. However, the reason for this generosity could not be found, since there was no significant difference in the degree of fairness or fear of rejection in the two genders. We also did not find any conclusive evidence that females are more reciprocal than males.

1. The Purpose of the Study

The purpose of this study is to test the following hypotheses:

1. Are people generally self interested
2. If people tend to be generous, what is the motive, i.e., either they fear rejection or do they have a preference for fairness
3. Is there any behavioral difference in bargaining between males and females, i.e.,
    a. Are females more generous than males
    b. If yes, then what is the motive
    c. Are females more reciprocal in their behavior than males

In this respect, we conduct an ultimatum bargaining experiment in a “same gender pairings” setting. In order to test the first hypothesis we look at the overall offers made by the proposers and the rejection rates of the responders. In order to test the second hypothesis we compare the offers that proposers anticipate will be accepted by the responders and the offers they actually make. If actual offer exceeds the minimum acceptable offer anticipated by the proposer, we conclude that he is fair minded. Otherwise, he is being generous due to fear of

rejection. In order to test the third hypothesis, we compare the offers and responses made by males and females in this game.

The rest of the paper is organized as follows. In the next section we discuss the importance and contribution of Experimental Economics to the field of Economics. In the third section we discuss the general concept and usage of the ultimatum game. In the fourth section we present the relevant literature review. The next two sections discuss the design and results of our experiment.

2. Why Experimental Economics

The study of Economics is moving from logic, positivism and field observation to one of experimentation under controlled conditions. As Weibull (2002) notes "Moving from arm-chair theorizing to controlled laboratory experiments may be as important a step in the development of economic theory as it once was for the natural sciences to move from Aristotelian scholastic speculation to modern empirical science".

The dialogue between theory and empirical work is the engine of scientific progress (Kuhn's shift in paradigm). Economics and other social sciences base their empirical investigation on natural events. Sometimes these might not be present or give confused signals. Then the task to address causality could be faced with two kinds of solutions: statistical and scientific. Experimental Economics refers to the scientific solution while standard econometric techniques are statistical solutions.

In this respect, Experimental Economics provides a powerful tool for the analysis of the rational choice foundations of traditional Economics. Over the last few decades, much has been achieved to explore to what extent economic agents conform to traditional assumptions, and what alternative views may be fruitfully explored. Also, Experimental Economics yields a formal and replicable system for analyzing alternative market structures before they are actually implemented.

Experiments take place in a controlled economic environment. By economic environment we mean individual economic agents together with an institution through which agents interact. Agents are economic because they are real people following real rules and looking at real payoffs. The control is both on

characteristics of the agents and on institutions. The subjects are characterized in the Experimental context by their economically relevant characteristics. Some characteristics are controlled directly and others must be controlled indirectly.

Most experiments in Economics tend to feature performance related payoffs due to several important reasons. One is that experimentalists usually want subjects to pay attention to, and be thoughtful about the tasks they are set. Performance related payoffs provide one mechanism for encouraging participants to attend and think. Incentive mechanisms are often also designed with the explicit intention of eliciting honest, as well as, thoughtful responses. But there is, perhaps, an even more basic rationale for the use of performance related incentives in a wide range of economic experiments. Specifically, incentives provide a tool for the experimenter to create specific choice situations in which subjects are then observed making real choices.

Smith (1994) cites the following seven reasons due to which Experimental Economics is fast becoming a growing sub-discipline in Economics.

1. Test a theory, or discriminate between theories.
2. Explore the causes of a theory's failure.
3. Establish empirical regularities as a basis for new theory.
4. Compare environments.
5. Compare institutions.
6. Evaluate policy proposals.
7. The laboratory as a testing ground for institutional design.

Experimental Economics became an autonomous field of research after World War II in concomitance with the increasing interest in Microeconomic theory. The VonNeumann-Morgenstern's Expected Utility Theory gave a lot of opportunity to test behaviour trough lotteries (Allais Paradox, 1953, etc). In 1952 the Conference of Santa Monica grounded Experimental Economics on more theoretical basis and gave to the discipline an autonomous methodological structure. Experimental Economics evolved in three areas:

1. Market experiments: Pioneering studies in this area were
    a. Chamberlin's (1948) Theory of Monopolistic Competition
    b. Smith's (1962) Double auction experiments

2. Game experiments: Revolutionary analysis in this area were
    a. Tucker's (1950) Prisoner's dilemma
    b. Nash (1950) Equilibrium

3. Individual choice experiments: Initial studies in this area were
    a. Von Neumann and Morgenstern's (1947) theory of choice under uncertainty
    b. Expected Utility Theory
    c. Choice of an uncertain lottery over a certain payment

In the last two decades Experimental Economics has widened its scope to cover various other economic issues mainly along these sets of experiments:

1. Public goods (Prisoner's dilemma and free riding)
2. Coordination (Games with multiple equilibria and the role of learning)

3. Bargaining behavior (Inefficient outcomes of bargaining)
4. Market organization and competitive equilibrium (Different forms by which exchange might be regulated)
5. Auction markets and disequilibrium behaviour (Test of game theoretic prescriptions, individual choice behaviour and violations of rational expectations behaviour).

In present times Experimental Economics is a well developed field within Economics. It has its own methodological practices, its own association (The Economic Science Association) that runs annual conferences, its own journal (Experimental Economics), and now its own Nobel Laureates (Vernon Smith and Daniel Kahneman, winners in 2002).

3. Why Ultimatum Game

Fair divisions of gains from trade are commonly observed in daily life. They occur even in the case of bargaining among two asymmetrically placed parties, one of whom holds a clear strategic advantage over the other. In addition to the substantial anecdotal evidence to this effect, the numerous experimental studies since the early 1980s have shown that fair outcomes play a truly focal role in bargaining situations.

Today most authors appear to agree on at least three major robust, yet unexpected, empirical regularities that arise in bargaining games. First, proposed divisions accumulate around the 50-50 division, that is, the actual outcomes are "more fair" than the usual prediction. Second, rejections, which should never be observed on the equilibrium path, occur in significant numbers. Third, more often than not, subjects who reject an offer make a disadvantageous counteroffer, that is, after rejecting a proposal that would leave them with x dollars; they propose a new division that spares them less than x dollars. Clearly, all of these observations are in contrast with the standard game-theoretic predictions, thereby putting bargaining theory, which has significant applications in the fields of industrial organization and international trade, on a hot seat.

The stylized form of negotiation known as the "ultimatum game" was first studied by experimental economists in Güth, Schmittberger and Schwarze (1982), and economists got a surprise. In the experiment, proposers offered their opponent on average 36.7% of the pie (ranging in size between 4 and 10 DM), while one offer of 30% (1.20 DM out of 4 DM) was rejected. These results went completely against the usual economic assumption of self interested individuals (explained later).

More than twenty years after its inception, the ultimatum bargaining game emerges as by far the most intensely studied experimental game. The game has been replicated in many environments, manipulating monetary stakes, gender, race and (more recently) species.

The format of the ultimatum game is as follows:

1. There are two players, the proposer and the responder.
2. The proposer is offered a sum of money by the experimentor.
3. He then has to offer the responder a fraction of that money.
4. If the responder accepts, they each get their agreed-upon share. Otherwise, neither gets anything.
5. There is no negotiation. Therefore, either the Responder takes the deal or he doesn't.

Some regard ultimatum game as one of the classic demonstrations of human irrationality. The rational (game theoretic) analysis of the game is simple. The responder has the choice of whatever the proposer gave him or Rs. 0. Clearly, anything at all is better than nothing. Thus, we would expect the responder to take whatever the proposer offers him. Knowing this, we would expect the proposer to offer the minimum amount, (e.g. Rs. 10 or even lower if possible) to the responder.

The experimental studies of the ultimatum game reflect that results deviate from this backwards induction point (Nash Equilibrium) predictions. When people play the ultimatum game in the lab, in a large number of human studies conducted with different incentives in different countries, the majority of proposers offer 40-50% of the total sum, and about half of all responders reject offers below 30%.

Now, it is not irrational for proposers to offer higher amounts. After all, if they know that responders will reject lower amounts, that's very rational. However, as shown above, it is irrational for the responder to reject the proposed division. So, why do they do it?

A common interpretation is that responders' behavior expresses that they would rather forgo some money than be treated unfairly (reciprocity). On the other hand, proposers' behavior is understood as one combining two motives; some taste for fairness and the anticipation that small offers may be turned down (fear of rejection) (Thaler, 1988).

To answer this question Forsythe, Horowitz, Savin and Sefton (1994) compare offers in the ultimatum game with offers in a simpler game called the dictator game. In the dictator game, the players who make the offers get to keep their share no matter what. Sure enough they make less equal offers, and keep more of the pie for themselves, thus indicating that their generous behavior can be attributed more to fear of rejection than to fairness.

Further, in ultimatum games in the laboratory, gender has been observed to influence a variety of decisions. For instance, Eckel and Grossman (2001) demonstrate chivalry (men accept lower offers from women than from men) and solidarity (women accept lower offers from women than from men). Solnick (2001) finds, in contrast, that players of both sexes demand more from women than from men. Both studies report that offers were lower to women than to men, and that offers from women and men were not significantly different.

4. Literature Review

A key insight from over two decades of Experimental Economics research is that people typically do not behave as selfishly as traditional Economics assumes them to do. An experimental game that produced very convincing evidence in this regard is the ultimatum game.

As mentioned earlier, in the first ultimatum game experiment by Güth, Schmittberger and Schwarze (1982), proposers offer their opponent on average 36.7% of the pie, while one offer of 30% is rejected.

Other important studies conducted in this respect are mentioned below.

Forsythe, Horowitz, Savin and Sefton (1994) find 47% of the pie being offered by the proposers.

Bolton and Zwick (1995) report a mean offer of 24% by the proposers with a quarter of them offering close to an equal split. The Rejection rate was found to be 38% with almost three quarters of the unequal offers being rejected.

Croson (1996) finds that among twenty six pairs of players, the mean offer was 45% with more than half of the proposers offering close to the equal split distribution. All offers less than 30% were rejected.

Buchan, Croson and Johnson (1999) find among 11 participants in Japan an average offer of 51% when the total pie equals US$ 50.

Henrich (2000), reports an average offer equal to 26% among 21 participants in Peru who each had to divide US$ 160 with their opponent.

Oosterbeek, Sloof and Van de Kuilen (2004) report the findings of a meta-analysis of 37 papers with 75 results from ultimatum game experiments and find that on average the proposer offers 40% of the pie to the responder. On average 16% of the offers is rejected.

It has been investigated whether differences in offers are caused by differences in the amount of money that is at stake. Results tend to reject this as an explanation. Studies in which raising the stakes in ultimatum games was the explicit focus typically find no significant differences in the shares offered, while the rejection rate decreases as the stakes are increased (Cameron 1999; Munier and Zaharia 1998; Slonim and Roth 1998; List and Cherry 2000).

Another explanation for variation in average offers and rejection rates across studies points to gender differences.

> Woman seems to differ from man in mental disposition, chiefly in her greater tenderness and less selfishness.... Man...delights in competition, and this leads to ambition which passes too easily into selfishness (Charles Darwin, 1874)

By the mid-1980s, the leading experimental researchers in negotiation had tossed the gender variable into a heap of discarded individual difference predictors, ranging from race to authoritarianism which had failed over scores of tests to produce consistent results. As Lewicki and Litterer (1985) conclude

“From what is known now, it does not appear that there is any single personality type or characteristic [including gender] that is directly and clearly linked to success in negotiation”.

Contemporary feminist ideals of minimalist sex differences further reinforced this perspective. Much of the relevant feminist research of that era sought “to shatter stereotypes about women’s characteristics and change people’s attitudes by proving that women and men are essentially equivalent in their personalities, behavioral tendencies, and intellectual abilities” (Eagly, 1995).

There remained, however, recurrent indications from the field that gender could materially affect negotiations. For example, the experiences of men and women entrepreneurs indicate that in 1999, women entrepreneurs in the U.S. started 40% of new businesses, yet made only 9% of total investment deals, and garnered a mere 2.3% of investment dollars (Almer, 2000; Rosenthal and Rodrigues, 2000).

There are multiple explanations offered for the gender gap, ranging from quality of life choices to ownership preferences (Prakash, 2000). However, some observers with direct experience point to differences in the way men and women entrepreneurs have approached their negotiations with prospective investors.

Perhaps for related reasons, salary negotiations are another arena in which gender gaps are well documented (Gerhart and Rynes, 1991; Kolb and Putnam, 1997; Stevens, Bavetta, and Gist, 1993). Laboratory and field studies suggest that women tend to enter salary negotiations with lower pay expectations, which are then ultimately fulfilled. One field study of MBA salary negotiations found that males negotiated significantly higher increases on initial salary offers than did female peers (Gerhart and Rynes, 1991).

Other studies suggest that many men and women assume that gender differences in negotiation exist and that they act consciously or unconsciously upon that assumption. One experiment based on an ultimatum game showed that, when the bidders knew their partner's gender from a simple name cue, both males and females made significantly lower (more competitive) offers to female respondents (Solnick, 2001).

Business Week publicized the conclusion from this study that, "Despite significant increases in women's relative wages in recent decades, both sexes may still feel that women will accept lower pay than men and that women are more malleable in a bargaining situation".

Similar results to the ultimatum game experiment were obtained in a separate study based on a trust game, in which parties may withhold or exchange back and forth a growing pot of money. When the initial passing party, whether male or female, knew the receiving party was male, the money was passed significantly more often than when the receiver was female (Croson and Buchan, 1999). In another recent study of MBA classroom negotiations over a real-estate sale, male and female sellers reported setting significantly higher intended initial offers when assigned to negotiate with female as opposed to male buyers (Riley, 2000). Similarly, field investigations of car sale negotiations have demonstrated that, controlling for the buyers' appearance and bargaining script, male and female dealers made higher first and final offers to female than to male buyers (Ayres, 1991).

There have been two major streams of research on gender in negotiation. The first surged and largely subsided with trends in psychological research on individual differences in the 1970s and 1980s. The second emerged as a feminist critique of the negotiation field in the 1990s.

The original wave of psychological research on gender as an individual difference in negotiation rested on the premise that gender would be a stable and reliable predictor of bargaining behavior and performance. Researchers tested whether female negotiators would be more cooperative and less self-interested than their male peers (e.g., Calhoun and Smith, 1999; Dawes, McTavish and Shaklee, 1977; Elliott, Hayward, and Canon, 1998). These studies and numerous others produced an assortment of seemingly contradictory findings.

In the 1990s, leading feminists within the negotiation field offered an alternative conceptualization of the role of gender as "a belief system that structures and gives meaning to social interactions" (Kolb and Putnam, 1995). They argued that this "androcentrism" (Bem, 1993) perpetuated a hierarchical relationship in which "male experience becomes the norm and feminine is seen as different" (Kolb and Putnam, 1995). The feminist literature has enriched the field by challenging scholars and practitioners to reevaluate taken-for-granted views of negotiation, but this work has not provided a theoretical basis for advancing the empirical investigation of gender effects.

The hypothesis that demographic variables influence economic and strategic behavior is not new among economists. Dating back at least to Rapoport and Chammah (1965), experimenters have tested in the laboratory for differences in behavior between men and women in situations involving salient monetary incentives. The study by Rapoport and Chammah is an early example in a long series of studies that employ variations of the prisoner's dilemma game to test for

such differences. More recently, researchers have turned to public goods, ultimatum, and dictator experiments.

Using variations on the prisoner's dilemma, some studies find women to be more cooperative or generous (e.g. Aranoff and Tedeschi, 1968; Meux, 1973; and Ortmann and Tichy, 1996); others find men to be more cooperative (e.g. Rapoport and Chammah, 1965; Kahn, Hottes and Davis, 1971; and Mack, Auburn and Knight, 1971); yet others find inconsistent or no significant difference between the sexes (e.g. Dawes, McTavish and Shaklee, 1977; Stockard, Van Dc Kragt and Dodge, 1988; and Orbell, Dawes and Schwartz-Shea, 1994). Mason, Phillips and Redington (1991) find no gender difference in a duopoly experiment. In public goods experiments, Brown-Kruse and Hummels (1993) find women contribute significantly less than men, while Nowell and Tinkler (1993) report significantly higher contributions by groups of women than by mixed-sex or all-male groups. Bolton and Katok (1995) find no differences between the behavior of men and women in dictator games.

Research in every other social and behavioral science, on the other hand, indicates substantial differences in the behavior of men and women in non-economic settings (for example, in psychology, studies in moral behavior, game playing, and helping behavior find consistent sex differences (Eagly and Crowley, 1986; Gilligan, 1982; Uesugi and Vinacke, 1963; and Vinacke, 1959). In sociology, studies find sex differences in criminality and illicit and prescribed drug use (Cooperstock and Parnell, 1982; Gottfredson and Hirschi, 1990; Kandel and Logan, 1984; and Wilson and Herrnstein, 1985). Studies in political science report the development of a “gender-gap” in political behavior. Since the 1980 elections, women, relative to men, have shown a bias towards Democratic candidates. Women's voting behavior is driven more by social issues than that of men (Baxter and Lansing, 1983; Christy, 1987; Goertzel, 1983; and Moore, 1996).

The general conclusion drawn from this work is that women are more socially-oriented (selfless) and men are more individually-oriented (selfish). If these differences survive in economic decisions, when money is at stake, then theories that model agents as homogeneous, or drawn from a common distribution, may predict behavior inaccurately. If instead, the differences in behavior are overwhelmed by monetary incentives, then economic decisions are fundamentally different from those examined in other social and behavioral sciences.

Real life observation indicates that males and females are treated differently in the work place (McPherson & Hirsch, 1995, and Lazaer & Rosen, 1990). Can the root of such differences be found in different decision-making behavior? Until recently, relatively few experimental Economics papers reported data on such matters, but in the past few years this line of research has become more popular. Researchers have examined which of the two sexes is more fair or generous, or compared the discriminatory behavior of men and women, to mention a few examples.

Eckel and Grossman (1996) examined gender differences in a punishment game, where subjects could choose to divide evenly a $10 (or $12) pie with someone who had previously been generous with another subject, or a $8 pie with someone who had previously been ungenerous. They found that women were at least as likely as men to punish ungenerous counterparts by choosing to divide the $8 pie.

Eckel and Grossman (1998) use a dictator experiment in which the dictator is asked to determine the division of $10 between himself/herself and an anonymous respondent. Their results show that women are more generous to

their partners than men: women donate, on average, about twice what men donate. They apply various tests in this regard including a z-test (of the hypothesis that men and women's mean donations are equal), a median test (of the hypothesis that the two populations have the same median donation), a contingency table test (of the hypothesis that the probability of a specific donation being made is independent of the dictator's sex), the Kolmogorov-Smirnov test and the Epps-Singleton test (of the hypothesis that there is no difference in the distributions of donations made by men and women), and Logit analysis on the data.

Eckel and Grossman (1999) have observed, the findings regarding gender seem to be conditional on the level of risk present in the experiment. In decisions where risk is involved, such as for the proposer in ultimatum games, there appear to be no systematic differences in behavior across genders. However, for decisions involving no risk, such as for dictators or punishers, women tend to be more generous and socially oriented in their behavior.

Croson and Buchan (1999) examine gender differences in bargaining using the trust game introduced by Joyce Berg et al. (1995). There are two main results of this experiment. First, there is no significant gender related difference in the amounts sent by proposers. Second, women responders return significantly more than male responders, even controlling for the amount received.

They give two explanations of why female responders return more than male responders. First, it may simply be that women are more altruistic than men (i.e., women care more about their partner's consumption than men do), and thus they return a higher proportion of their earnings. However, if this were so one would expect to see a significant gender effect in both amounts sent and proportion returned, not only in the latter.

Alternatively, the authors suggest that a different motive, reciprocity, could be driving the differences between male and female behavior in this setting. This explanation involves women being more likely to reciprocate than males, rather than being simply more altruistic.

Botelho, Hirsh and Rutström (2000) use experimental data collected in Russia and in the United States using a simple ultimatum game. They find that the average offer made by female subjects in the two countries equals about 45% of the pie, and the median offer is 48.8% and 42.5% in the United States and Russia, respectively. Corresponding figures for male subjects are 31.5% in the United States and 35.3% in Russia, while the median offer is 30% in both countries. Further they report that, irrespective of the offer range, female subjects in both the United States and Russia exhibit substantially higher rejection rates than male subjects.

Eckel and Grossman (2001) test the effect of gender and gender pairings in the ultimatum game. They find that although women proposers are more generous then men, the difference is statistically weak. Further, they observe systematic differences in the behavior of men and women, i.e., women are significantly more cooperative; the probability that a woman will accept a given offer is higher than for a man.

They also find that context is important. The sex of the respondent's partner has a strong effect on the subject’s decision in the sense that women both reject and get rejected less frequently (solidarity between women) and that male respondents do not usually reject unfair offers by female proposers (chivalry among men).

Solnick (2001) uses the ultimatum game to suggest that both males and females tend to offer less to women seemingly expecting women to be content with less. However, as indicated by the higher minimum acceptable offers chosen by females, this expectation seems to be wrong footed. Further, both genders set their minimum acceptable offers higher when they are facing a female proposer thus indicating that they expect more generosity from females as compared to males.

Andreoni and Vesterlund (2001) compared gender behavior in dictator games and found that women gave more overall and were more likely to divide tokens evenly despite different monetary values, while men became less generous as the value of their tokens increased relative to the value of the responder's tokens. It may be that women are more altruistic when the costs and benefits of giving are symmetric, but men may be more altruistic when the benefit of giving is higher than the costs.

Specifically, Andreoni and Vesterlund find that, while women give significantly more when costs and benefits are symmetric, when the value of giving is three times the cost of giving, men give significantly more than women.

The authors conclude that there are systematic differences by sex, and that these can have important and interesting consequences for economic behavior. Further, the results have implications for experimental methodology. In particular, experimenters may need to take greater care in assuring that their studies are gender balanced, and that findings are due to economic factors and not the gender composition of their samples

Andreoni and Petrie (2004) consider a linear public goods game and show that, on average, women are no more or less cooperative than men. Although men give roughly 15% more than women, it is not significant. However, men play the extremes significantly more than women. Men contribute zero tokens 27.7% of the time, but women do so only 16.3% of the time. Women also contribute all of their tokens only 9.4% of the time, compared to men who do so 22.1% of the time.

Dufwenberg and Gneezy (2004) examine whether a single sex group of only males will coordinate differently than a group of only females and report that no difference in behavior between females and males was found.

The authors also raise a methodological issue, i.e., is there a bias in the research community against reporting or publishing results that document the absence of a gender effect? If so, there is a risk of bias in perceptions regarding the magnitude and limits of gender differences.

They conclude that results are somewhat mixed, and since results do not always point in the same direction it is too early to draw far-reaching conclusions regarding the behavioral differences of men and women.

Eckel and Grossman (forthcoming) provide an exceptional survey of experiments conducted in the last decade to test gender behavioral differences. After reviewing several public goods experiments they conclude that these experiments offer no clear evidence of a systematic difference between men and women.

Further, they suggest that the contradictory results of the prisoner's dilemma, public goods, and ultimatum experiments may be caused by failure to control for important environmental factors that might confound basic gender differences. In their view, the dictator experiment offers a simpler design that removes possible confounding factors such as considerations of strategic risk.

They find that as responders in ultimatum experiments and in dictator games, systematic differences are revealed, i.e., the choices women make are less individually-oriented and more socially-oriented.

So how can we reconcile the fact that gender differences seem so pronounced in certain domains and invisible in others? The only plausible answer to this question may be is that:

> Findings from gender research mirror the inductive conclusions one is likely to draw from daily experience: Men do not consistently act one way and women another, sometimes gender matters, and sometimes it does not.

5. Experimental Design

A total of 146 (76 females and 70 males) subjects participated in this study. Graduate and undergraduate students were recruited from the student population at International Institute of Islamic Economics, International Islamic University, Islamabad.

There were three sessions, one held on 20 May 2004 (comprising 24 undergraduate male students), one on 21 May 2004 (comprising 76 graduate female students) and one on 22 May 2004 (comprising 46 graduate male students). In each session half of the subjects made offers and the remaining half accepted or rejected these offers.

Subjects were paid in the form of 5 bonus marks for participating (the worth of these marks is assumed to be high enough for the students to induce them to participate in the game), and they bargained over Rs. 50 in all the sessions.

All of the experimental sessions were conducted in large classrooms where there was plenty of room for subjects to spread out for privacy. All sessions had two rounds. In the first round, the proposers were handed over a simple questionnaire which required them to state what they expected is the minimum offer they should make that would be acceptable to the responder. Similarly, the responders were asked to state the minimum acceptable offer (MAO) that they will accept from the proposer.

In the second round, the proposers were handed over an envelope containing money along with another envelope in which they could put the amount they intended to give to the responder.

Once the proposers had made their decisions, they handed over the responders' envelopes to the experimenter who distributed these envelopes between the responders randomly (use of a random number list was made in this respect).

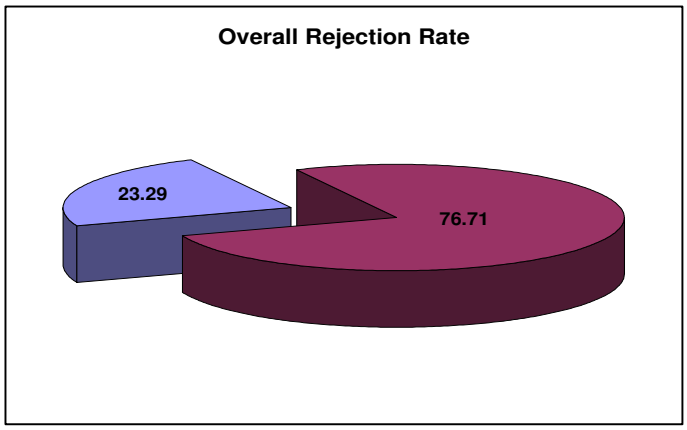
Each responder after considering the offer made by the proposer decided whether to keep the envelope (in case of acceptance) or return it to the experimenter (in case of rejection). The proposers whose offers were rejected then returned their envelopes so that in case of rejection both the parties got nothing.

6. Results

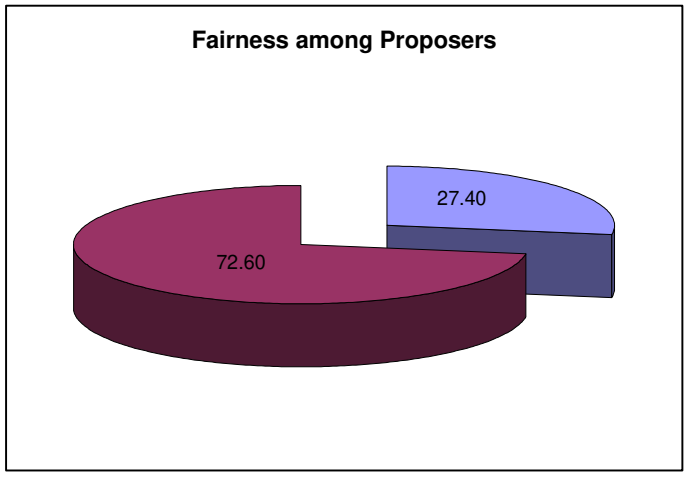
6.1 Descriptive Statistics

The mean offer for the entire group of subjects (proposers) is Rs. 22.88 (46% of the total amount) thus indicating that people are more generous than what economists predict. Further, this result is consistent with the standard experimental results. The offers are reported in Table 1 (Annexure), as well as, the following figure.

The rejection rate for all the responders is 23.29%. It can be seen from Table 2 (Annexure) that most of the rejections by responders are for the offers that are below the 50% division. However, in some cases fair and hyper-fair were also rejected by the responders in cases where they expected more generosity from the proposers. This rejection rate figure is also compatible with experimental results found in many of the above-mentioned studies.



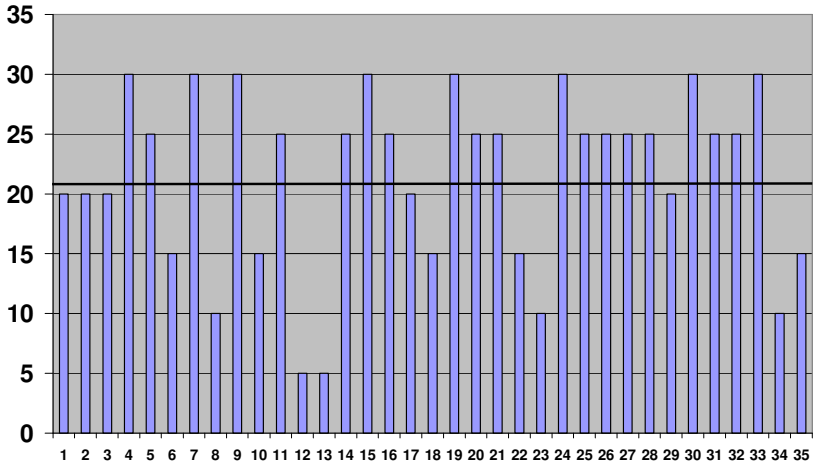
The proportion of proposers who were generous due to their preference for fairness (who gave more than what they thought would be acceptable to the responder) is 27.4%. The remaining proposers offer generously due to fear of rejection. Again this is analogous to the experimental theory that generosity on part of the proposers is mainly attributable to the fear that the offer will be rejected and they would get nothing. Fairness only plays a smaller part in this behavior.



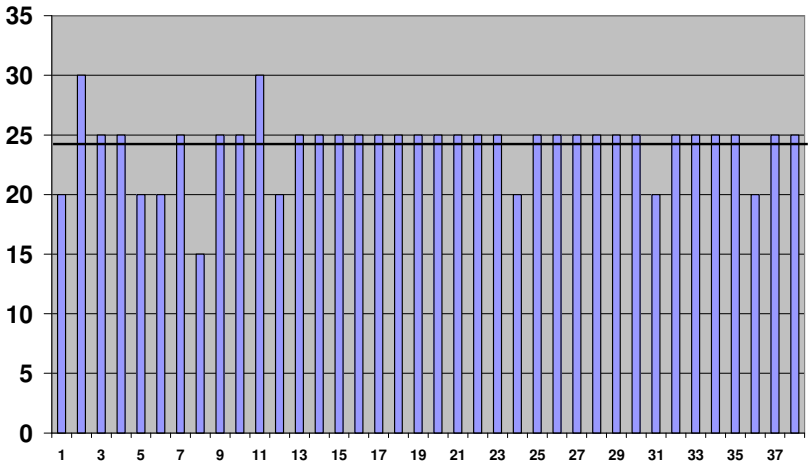
Regarding differences in proposer behavior, males offered Rs. 21.57 (43% of the pie) to the responders while females offered Rs. 24.08 (48% of the total amount)

to their counterparts. The details of these offers are given in Tables 3 and 4 (Annexure). The same are reported for the two genders in the following figures.

Male Offers

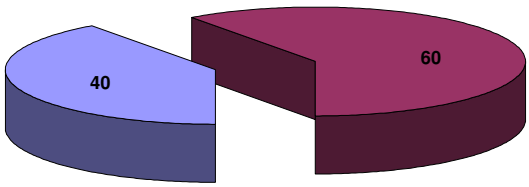


Female Offers

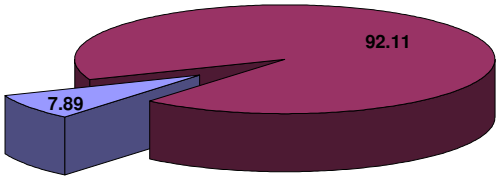


The rejection rates across genders vary by a considerable amount. The rejection rate for males is 40% while that for females is almost 8%. This difference in rejection is, may be, attributable to the fact that females on average offer higher

Male Rejection Rates



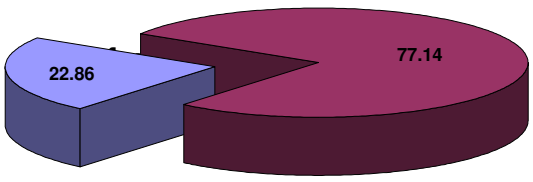
Female Rejection Rates



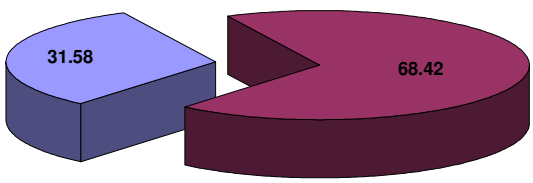
shares as compared to males. This is evident from the data reported in the tables that most of the offers rejected by males lie in the 5-15 rupees range (10-30% share of the pie). Further, the variance in female offers is much lesser (2.81) as compared to males (7.45). This tells us that female offers do not exhibit much variation around the mean offer. The same can not be concluded for males.

The proportion of proposers exhibiting fairness is also considerably different with female proposers exhibiting a greater level of fairness as compared to males. Almost 32% of the females demonstrated fairness in their offers to the responders as compared to nearly 23% of the males. However, a considerable amount of proposers in both genders had fear of rejection as the main ingredient in their behavior. This fear of rejection is well founded, especially in males where many of the unfair offers were rejected.

Fairness in Male Proposers



Fairness in Female Proposers



In the following paragraphs we report the results of various tests carried out in respect of testing the hypothesis stated in the beginning.

1. Are people generally self interested?

In order to test whether people systematically make generous offers or not we applied the t-test of significance. The hypothesis in this case is that whether mean offer is significantly different from Rs. 5 (10% of the pie and the minimum amount that the proposer can offer to the responder as suggested by economists). The hypothesis is rejected at 5% level of significance (the results are reported in Table 5 of the annexure). Thus we can conclude that people do not behave selfishly as proposed by game theorists.

2. If people tend to be generous, what is the motive?

In this respect we use the one-tailed z-test of proportions to test the hypothesis that proportion of fair offers is not significantly different from 0.5, i.e., we expect that taste for fairness and fear of rejection figure equally in the proposer behavior. Again, the hypothesis is rejected at 2% level of significance. The results are reported in Table 6 of the annexure. In this case we can conclude that fairness has a lesser role to play in people's decisions as compared to fear of rejection.

3. Is there any behavioral difference in bargaining between males and females?

    a. Are females more generous than males?

In this case we apply the tests of equality of mean and medians (Tables 7 and 8 of annexure). The hypothesis is that both males and females make equal offers on average. The mean test shows that the difference between mean offers is significant thus indicating that on average, male proposers offer less than what female proposers offer. This may show that females are more generous than males. However, the median test indicates that median offers across genders are the same.

In addition we also regress offers made on the gender of the proposer (dummy variable). The detailed results are reported in Table 9 of the annexure. The regression indicates that gender has a significant effect on the mean offer (significant t-statistic and low p-value). The intercept (21.57) gives male mean offer whereas the coefficient of DUMMYMF (2.51) gives the difference between the male mean offer and the female mean offer.

Another test that we run is the equality of variance test (Table 10 of annexure). The results indicate that male offers have a greater variance than that of female offers. Further, the difference in two variances is significant (low p-values of four out of five tests). Therefore, we can conclude that women deviate from the generous offers less frequently than males.

Since we have found that females display a more generous behavior than males so we proceed to the next step, i.e.,

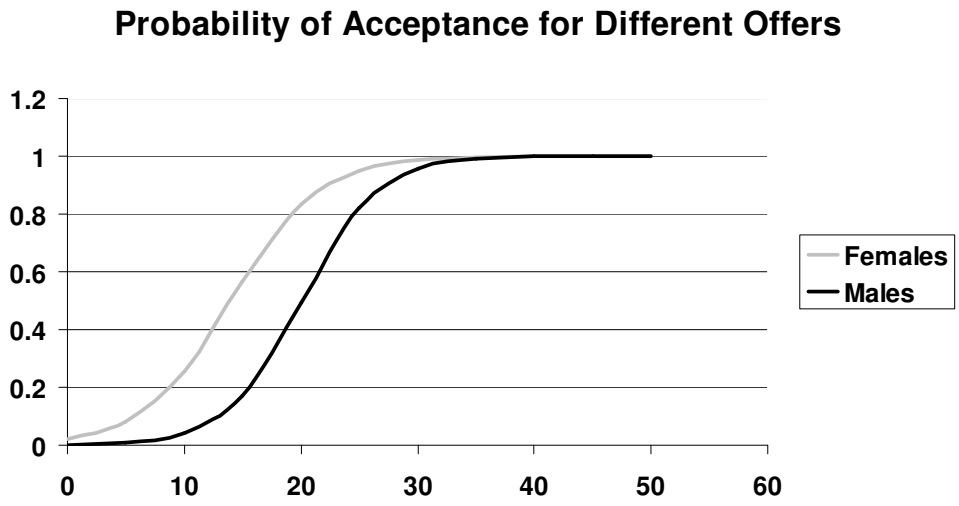
b. What is the motive of female generosity?

In this case we test whether females are generous because they have a greater taste for fairness as compared to men or do they have a greater fear of rejection which causes them to offer generously. Again we use the z-test of proportions to test the hypothesis that proportion of fair offers made by females is equal to that of males. The results (reported in Table 11 of the annexure) indicate that the hypothesis is accepted at 5% level of significance, i.e., females offer more generously not due to the reason that they are more fair or that the fear rejection more than the males.

c. Are females more reciprocal than males?

In this case we fit a Logit model for regressing acceptance rates for males and females (dummy variable) on the offer made by each gender respectively. The results (Tables 12 and 13 of annexure) indicate that female offer has an insignificant effect on rejection/acceptance. i.e., amount of offer insignificantly explains rejection/acceptance behavior of the respondents. On the contrary, male offer has a significant effect on rejection/acceptance. i.e., amount of offer significantly explains rejection/acceptance behavior of the respondents.

Further, in order to determine gender based differences in behavior, probabilities of accepting an offer are calculated for each gender (Table 14). The information is also given in the following figure.



As can be seen from the above figure, the probability of females accepting a given offer is greater than that of males, for all offers. This indicates that female responders are more likely to accept both unfair and fair offers than males. This result seems to be consistent with the finding that males have a higher rejection rate than females. Also, it is important to note that the probability of female accepting an unfair offer is far greater than males (for example, the chances of a female accepting a 10%, 20% and 30% shares is nine, six and three times greater than that for males, respectively).

Combining the lower rejection rates and higher acceptance probabilities of females for unfair offers, we can conclude that females are not necessarily more reciprocal than males.

7. Conclusion

The most elementary result, also verified by many other experimental studies, is that people in general are not selfish, at least not to the extent that economists assume. This calls for a serious rethinking by economists since the existing neoclassical microeconomic theory is firmly based on the assumption of self interested economic agents. In this respect, we would like to point out that Muslim economists throughout the world can make a significant contribution since they have the orientation to a relatively different concept of human behavior revealed in the divine sources.

Secondly, people tend to be more giving in negotiations. However, this generosity is mainly grounded on their fear of rejection rather than any specific liking for fairness. Again this is a replication of previous studies. However, at the start of this study, we were of the view that the people of an Islamic society, in general, and students of Islamic University, Islamabad, in particular, would show a greater concern for fairness rather than fear of rejection, especially since they go through. As is evident, the results of this study prove these views wrong. Further, this fear of rejection was very realistic, particularly, in case of males where the rejection rates for unfair offers were very high.

Lastly, regarding gender differences, we have found females to be more generous than males. However, the reason for this generosity could not be found, since there was no significant difference in the degree of fairness or fear of rejection in the two genders. May be economists should look towards psychological motives rather than purely economic motives for the observed differences in behavior. We also did not find any conclusive evidence that females are more reciprocal than males.

8. References

Almer, E. (2000), *What Women Need to Know About Starting Up*, The New York Times: 9, New York, NY

Andreoni, J. and Vesterlu**nd, L. (**2001), Which is the Fair Sex? Gender Differences in Altruism, *The Quartely Journal of Economics, 116*

Andreoni, J. and Petrie, R. (2004), Beauty, Gender and Stereotypes: Evidence from Laboratory Experiments, *SSRI Working Paper 2004-06*, Department of Economics, University of Wisconsin, Madison

Aranoff, D. and Tcdeschi, J.T. (1968), Original Stakes and Behavior in the Prisoner's Dilemma Game, *Psychonomic Science, 12(2)*

Ayres, I. (1991), Fair Driving: Gender and Race Discrimination in Retail Car Negotiations, *Harvard Law Review, 104*

Baxter, S. and Lansing, M. (1983), *Women and Politics: The Visible Majority*, University of Michigan Press, Ann Arbor, MI

Bem, S.L. (1993), *The Lenses of Gender: Transforming the Debate on Sexual Inequality*, Yale University Press, New Haven, CT

Bolton, G.E. and Katok, E. (1995), An Experimental Test for Gender Differences in Beneficent Behavior, *Economic Letters, vol. 48*

Bolton, G.E. and Zwick, R. (1995), Anonymity versus Punishment in Ultimatum Bargaining, *Games and Economic Behavior, Vol.10*

Botelho, A., Hirsh, M.A. and Rutström, E.E. (2000), Culture, Nationality and Demographics in Ultimatum Games, *Working Paper Series No. 7*, Núcleo de Investigaçao em Microeconomia Aplicada, Universidade do Minho

Brown-Kruse, J. and Hummels, D. (1993), Gender Effects in Laboratory Public Goods Contributions: Do Individuals Put Their Money Where Their Mouth Is?, *Journal of Economic Behavior and Organization, 22(3)*

Buchan, N.R., Croson, R. and Johnson, E.J. (1999), Understanding What's Fair: Contrasting Perceptions of Fairness In Ultimatum Bargaining in Japan and the United States, *Discussion Paper*, University Of Wisconsin

Calhoun, P.S. and Smith, W.P. (1999), Integrative Bargaining: Does Gender Make a Difference?, *International Journal of Conflict Management, 10 (3)*

Cameron, L.A. (1999), Raising the Stakes in the Ultimatum Game: Experimental Evidence from Indonesia, *Economic Inquiry 37*

Christy, C.A. (1987), *Sex Differences in Political Participation: Process of Change in Fourteen Nations*, Praeger, New York, NY

Cooperstock, R. and Parnell, P. (1982), Research on Psychotropic Drug Use: a Review of Findings and Methods, *Social Science and Medicine, vol. 16*

Croson, R. (1996), Information in Ultimatum Games: An Experimental Study, *Journal of Economic Behavior and Organization 30*

Croson, R. and Buchan, N. (1999), Gender and Culture: International Experimental Evidence from Trust Games, *The American Economic Review, Vol. 89, No. 2*

Dawes, R.M., McTavish, J. and Shaklee, H. (1977), Behavior, Communication, and Assumptions about Other People's Behavior in a Common Dilemma Situation, *Journal of Personality and Social Psychology, 35(1)*

Dufwenberg, M. and Gneezy, U. (2004), Gender & Coordination, *Working Paper 2004-02*, Department of Economics, University of Arizona, Tuscon

Eagly, A.H. (1995), The Science and Politics of Comparing Women and Men, *American Psychologist, 50 (3)*

Eagly, A.H. and Crowley, M. (1986), Gender and Helping Behavior: A Meta-Analytic Review of the Social Psychological Literature, *Psychological Bulletin, 100(3)*

Eckel, C.C. and Grossman, P.J. (1996), The Relative Price of Fairness: Gender Differences in a Punishment Game, *Journal of Economic Behavior and Organization, 30(2)*

Eckel, C.C. and Grossman, P.J. (1998), Are Women Less Selfish than Men?: Evidence from Dictator Experiments, *The Economic Journal, 108(448)*

Eckel, C.C. and Grossman, P.J. (2001), Chivalry and Solidarity in Ultimatum Games, *Economic Inquiry, 39 (2)*

Eckel, C.C. and Grossman, P.J. (forthcoming), Differences in The Economic Decisions of Men and Women: Experimental Evidence, *in C. Plott and V.L. Smith (eds) Handbook of Results in Experimental Economics*, Elsevier Inc., USA

Elliott, C.S., Hayward, D.M. and Canon, S. (1998), Institutional Framing: Some Experimental Evidence, *Journal of Economic Behavior & Organization, 35 (4)*

Forsythe, R., Horowitz, J.L., Savin, N.E. and Sefton, M. (1994), Fairness in Simple Bargaining Experiments, *Games and Economic Behavior, Vol. 6*

Gerhart, B. and Rynes, S. (1991), Determinants and Consequences of Salary Negotiations by Male and Female MBA Graduates, *Journal of Applied Psychology, 76 (2)*

Gilligan, C. (1982), *In a Different Voice: Psychological Theory and Women's Development*, Harvard University Press, Cambridge, MA

Goertzel, T.G. (1983), The Gender Gap: Sex, Family Income, and Political Opinions in the Early 1980's, *Journal of Political and Military Sociology, vol. 11*

Gottfredson, M.R. and Hirschi, T. (1990), *A General Theory of Crime*, Stanford University Press, Stanford, CA

Güth, W., Schmittberger, R. and Schwarze, B. (1982), An Experimental Analysis of Ultimatum Bargaining, *Journal of Economic Behavior and Organization, 3:4*

Henrich, J. (2000), Does Culture Matter in Economic Behavior? Ultimatum Game Bargaining among the Machiguenga of the Peruvian Amazon, *American Economic Review 90*

Kahn, A., Hottes, J. and Davis, W.L. (1971), Cooperation and Optimal Responding in the Prisoner's Dilemma Game: Effects of Sex and Physical Attractiveness, *Journal of Personality and Social Psychology, 17(3)*

Kandel, D.B. and Logan, J.A. (1984), Patterns of Drug Use from Adolescence to Young Adulthood: Periods of Risk for Initiation, Continued Use, and Discontinuation, *American Journal of Public Health, vol. 74*

Kolb, D.M. and Putnam, L.L. (1997), Through the Looking Glass: Negotiation Theory Refracted Through the Lens of Gender, *in Sandra E. Gleason (ed.) Workplace Dispute Resolution: Directions for the Twenty-First Century*, Michigan State University, East Lansing, Michigan

Lazaer, E. and Rosen, S. (1990), Male-Female Wage Differentials in Job Ladders, *Journal of Labor Economics, 8*

Lewicki, R. and Litterer, J. (1985), *Negotiation*, Homewood, IL: Irwin

List, J.A. and Cherry, T.L. (2000), Learning to Accept in Ultimatum Games: Evidence from an Experimental Design that Generates Low Offers, *Experimental Economics 3*

Lopomo, G. and Ok, E.A. (2001), Bargaining, Interdependence, and the Rationality of Fair Division, *Journal of Economics, Vol. 32, No. 2*

Mack, D., Auburn, P.N. and Knight, G.P. (1971), Sex Role Identification and Behavior in a Reiterated Prisoner's Dilemma Game, *Psychonomic Science. 24(6)*

Mason, C.F, Phillips, O.R. and Redington, D.B. (1991), The Role of Gender in a Non-Cooperative Game, *Journal of Economic Behavior and Organization. 15(2)*

McPherson, D. and Hirsch, B. (1995), Wages and Gender Composition: Why do Women's Jobs Pay Less?, *Journal of Labor Economics 13*

Meux, E.P (1973), Concern for the Common Good in an n-Person Game, *Journal of Personality and Social Psychology, 28(3)*

Moore, D.W. (1996), Clinton's Increased Support over Past Year: Older Independents, Richest and Poorest Americans, *Gallup News Service, vol. 60*

Munier, B. and Zaharia, C. (1998), High Stakes do Change Acceptance Behavior in Ultimatum Bargaining Games: Experimental Evidence from France and Romania, *Discussion paper*, ENS Cachan

Nowell, C. and Tinkler, S. (1994), The Influence of Gender on the Provision of a Public Good, *Journal of Economic Behavior and Organization, 25(1)*

Oosterbeek, H., Sloof, R. and Van de Kuilen, G. (2004), Cultural Differences in Ultimatum Game Experiments: Evidence from a Meta-Analysis, *Experimental Economics, 7*

Orbell, J., Dawes, R. and Schwartz-Shea, P. (1994), Trust, Social Categories, and Individuals: The Case of Gender, *Motivation and Emotion, 18(2)*

Ortmann, A. and Tichy, L.K. (1999), Gender Effects in the Laboratory: Evidence from Prisoners' Dilemma Games, *Journal of Economic Behavior and Organization, 39(3)*

Prakash, S. (2000), Women in Business, Morning Edition, *National Public Radio, Washington, D.C.*

Rapoport, A. and Chammah, A.M. (1965), Sex Differences in Factors Contributing to the Level of Cooperation in the Prisoner's Dilemma Game, *Journal of Personality and Social Psychology, 2(6)*

Riley, H.C. (2000), *Expectations and Gender in Negotiation*, Harvard Business School, Boston, MA

Riley, H. and McGinn, K.L. (2002), When Does Gender Matter in Negotiation? *Faculty Research Working Paper 02-036*, John F. Kennedy School of Government, Harvard University, Cambridge, MA

Rosenthal, B. and Rodrigues, M. (2000), *Women-Owned Firms Attract Investors for Business Growth*, National Foundation for Women Business Owners, Washington, D.C.

Smith, V.L. (1962), An Experimental Study of Competitive Market Behavior, The *Journal of Political Economy, 70(2)*

Smith, V.L. (1994), Economics in the Laboratory, *Journal of Economic Perspectives 8(1)*

Slonim, R. and Roth, A.E. (1998), Learning in High Stakes Ultimatum Games: An Experiment in the Slovak Republic, *Econometrica 66*

Solnick, S.J. (2001), Gender Differences in Ultimatum Games, *Economic Inquiry, 39 (2)*

Stevens, C.K., Bavetta, A.G. and Gist, M.E. (1993), Gender Differences in the Acquisition of Salary Negotiation Skills: The Role of Goals, Self-Efficacy, and Perceived Control, *Journal of Applied Psychology, 78 (5)*

Stockard, J., Van De Kragt, A.J.C. and Dodge, P.J. (1988), Gender Roles and Behavior in Social Dilemmas: Are There Sex Differences in Cooperation and in Its Justification?, *Social Psychology Quarterly, 51(2)*

Stramer, C. (2003), On Testing Game Theory, *Discussion paper prepared for the workshop on The Role of Experimental Methods in Economics (September 13-14)*, University of Nottingham, UK

Thaler, R.H. (1988), Anomalies: The Ultimatum Game, *The Journal of Economic Perspectives, Vol. 2, No. 4*

Uesugi. T.K. and Vinacke, E.W. (1963), Strategy in a Feminine Game, *Sociometry, 26(1)*

Vinacke, W. E. (1959), Sex Roles in a Three-Person Game, Sociometry, 22(4)

Wiebull, J.W. (2002), Testing Game Theory, SSE Working Paper 382, Stockholm School of Economics and Research Institute of Industrial Economics, Stockholm, Sweden.

Wilson, J.Q. and Herrnstein R.J. (1985), Crime and Human Nature, Simon and Schuster, New York, NY

Annexure

Table 1: OFFERS, EXPECTED MAOs AND MAOs FOR THE ENTIRE GROUP

Game	Expected MAO	MAO	Offer	Game	Expected MAO	MAO	Offer
01	20	15	20	38	25	25	25
02	25	25	30	39	5	20	20
03	25	25	25	40	20	25	20
04	25	25	25	41	20	25	20
05	20	15	20	42	30	35	30
06	20	10	20	43	20	25	25
07	20	25	25	44	15	30	15
08	10	15	15	45	20	30	30
09	20	25	25	46	5	15	10
10	20	25	25	47	5	10	30
11	25	25	30	48	15	35	15
12	15	20	20	49	25	20	25
13	25	25	25	50	5	10	5
14	25	25	25	51	5	25	5
15	20	25	25	52	25	25	25
16	25	5	25	53	30	25	30
17	20	25	25	54	25	25	25
18	25	30	25	55	5	0	20
19	25	25	25	56	15	25	15
20	25	25	25	57	30	20	30
21	25	25	25	58	25	15	25
22	25	25	25	59	25	25	25
23	25	25	25	60	15	20	15
24	20	25	20	61	5	30	10
25	25	25	25	62	30	5	30
26	25	25	25	63	25	25	25
27	25	25	25	64	25	25	25
28	25	25	25	65	25	20	25
29	25	25	25	66	25	25	25
30	25	25	25	67	20	15	20
31	25	25	20	68	30	50	30
32	20	25	25	69	25	25	25
33	20	25	25	70	25	15	25
34	25	20	25	71	30	5	30
35	25	25	25	72	10	25	10
36	25	25	20	73	10	25	15
37	20	50	25				

Table 2: ACCEPTANCE / REJECTION AND FAIRNESS / FEAR OF REJECTION

Game	Offer	Accepted /Rejected	Fairness	Game	Offer	Accepted /Rejected	Fairness
1	20	Accepted	Fear of Rejection	38	25	Accepted	Fear of Rejection
2	30	Accepted	Fair	39	20	Accepted	Fair
3	25	Accepted	Fear of Rejection	40	20	Rejected	Fear of Rejection
4	25	Accepted	Fear of Rejection	41	20	Rejected	Fear of Rejection
5	20	Accepted	Fear of Rejection	42	30	Rejected	Fear of Rejection
6	20	Accepted	Fear of Rejection	43	25	Accepted	Fair
7	25	Accepted	Fair	44	15	Rejected	Fear of Rejection
8	15	Accepted	Fair	45	30	Accepted	Fair
9	25	Accepted	Fair	46	10	Rejected	Fair
10	25	Accepted	Fair	47	30	Accepted	Fair
11	30	Accepted	Fair	48	15	Rejected	Fear of Rejection
12	20	Accepted	Fair	49	25	Accepted	Fear of Rejection
13	25	Accepted	Fear of Rejection	50	5	Rejected	Fear of Rejection
14	25	Accepted	Fear of Rejection	51	5	Rejected	Fear of Rejection
15	25	Accepted	Fair	52	25	Accepted	Fear of Rejection
16	25	Accepted	Fear of Rejection	53	30	Accepted	Fear of Rejection
17	25	Accepted	Fair	54	25	Accepted	Fear of Rejection
18	25	Rejected	Fear of Rejection	55	20	Accepted	Fair
19	25	Accepted	Fear of Rejection	56	15	Rejected	Fear of Rejection
20	25	Accepted	Fear of Rejection	57	30	Accepted	Fear of Rejection
21	25	Accepted	Fear of Rejection	58	25	Accepted	Fear of Rejection
22	25	Accepted	Fear of Rejection	59	25	Accepted	Fear of Rejection
23	25	Accepted	Fear of Rejection	60	15	Rejected	Fear of Rejection
24	20	Rejected	Fear of Rejection	61	10	Rejected	Fair
25	25	Accepted	Fear of Rejection	62	30	Accepted	Fear of Rejection
26	25	Accepted	Fear of Rejection	63	25	Accepted	Fear of Rejection
27	25	Accepted	Fear of Rejection	64	25	Accepted	Fear of Rejection
28	25	Accepted	Fear of Rejection	65	25	Accepted	Fear of Rejection
29	25	Accepted	Fear of Rejection	66	25	Accepted	Fear of Rejection
30	25	Accepted	Fear of Rejection	67	20	Accepted	Fear of Rejection
31	20	Accepted	Fear of Rejection	68	30	Rejected	Fear of Rejection
32	25	Accepted	Fair	69	25	Accepted	Fear of Rejection
33	25	Accepted	Fair	70	25	Accepted	Fear of Rejection
34	25	Accepted	Fear of Rejection	71	30	Accepted	Fear of Rejection
35	25	Accepted	Fear of Rejection	72	10	Rejected	Fear of Rejection
36	20	Rejected	Fear of Rejection	73	15	Rejected	Fair
37	25	Accepted	Fair				

Table 3: DATA REGARDING MALES

Game	Expected MAO	MAO	Offer	Accepted / Rejected	Fairness
1	5	20	20	Accepted	Fair
2	20	25	20	Rejected	Fear of Rejection
3	20	25	20	Rejected	Fear of Rejection
4	30	35	30	Rejected	Fear of Rejection
5	20	25	25	Accepted	Fair
6	15	30	15	Rejected	Fear of Rejection
7	20	30	30	Accepted	Fair
8	5	15	10	Rejected	Fair
9	5	10	30	Accepted	Fair
10	15	35	15	Rejected	Fear of Rejection
11	25	20	25	Accepted	Fear of Rejection
12	5	10	5	Rejected	Fear of Rejection
13	5	25	5	Rejected	Fear of Rejection
14	25	25	25	Accepted	Fear of Rejection
15	30	25	30	Accepted	Fear of Rejection
16	25	25	25	Accepted	Fear of Rejection
17	5	0	20	Accepted	Fair
18	15	25	15	Rejected	Fear of Rejection
19	30	20	30	Accepted	Fear of Rejection
20	25	15	25	Accepted	Fear of Rejection
21	25	25	25	Accepted	Fear of Rejection
22	15	20	15	Rejected	Fear of Rejection
23	5	30	10	Rejected	Fair
24	30	5	30	Accepted	Fear of Rejection
25	25	25	25	Accepted	Fear of Rejection
26	25	25	25	Accepted	Fear of Rejection
27	25	20	25	Accepted	Fear of Rejection
28	25	25	25	Accepted	Fear of Rejection
29	20	15	20	Accepted	Fear of Rejection
30	30	50	30	Rejected	Fear of Rejection
31	25	25	25	Accepted	Fear of Rejection
32	25	15	25	Accepted	Fear of Rejection
33	30	5	30	Accepted	Fear of Rejection
34	10	25	10	Rejected	Fear of Rejection
35	10	25	15	Rejected	Fair

Table 4: DATA REGARDING FEMALES

Game	Expected MAO	MAO	Offer	Accepted / Rejected	Fairness
1	20	15	20	Accepted	Fear of Rejection
2	25	25	30	Accepted	Fair
3	25	25	25	Accepted	Fear of Rejection
4	25	25	25	Accepted	Fear of Rejection
5	20	15	20	Accepted	Fear of Rejection
6	20	10	20	Accepted	Fear of Rejection
7	20	25	25	Accepted	Fair
8	10	15	15	Accepted	Fair
9	20	25	25	Accepted	Fair
10	20	25	25	Accepted	Fair
11	25	25	30	Accepted	Fair
12	15	20	20	Accepted	Fair
13	25	25	25	Accepted	Fear of Rejection
14	25	25	25	Accepted	Fear of Rejection
15	20	25	25	Accepted	Fair
16	25	5	25	Accepted	Fear of Rejection
17	20	25	25	Accepted	Fair
18	25	30	25	Rejected	Fear of Rejection
19	25	25	25	Accepted	Fear of Rejection
20	25	25	25	Accepted	Fear of Rejection
21	25	25	25	Accepted	Fear of Rejection
22	25	25	25	Accepted	Fear of Rejection
23	25	25	25	Accepted	Fear of Rejection
24	20	25	20	Rejected	Fear of Rejection
25	25	25	25	Accepted	Fear of Rejection
26	25	25	25	Accepted	Fear of Rejection
27	25	25	25	Accepted	Fear of Rejection
28	25	25	25	Accepted	Fear of Rejection
29	25	25	25	Accepted	Fear of Rejection
30	25	25	25	Accepted	Fear of Rejection
31	25	25	20	Accepted	Fear of Rejection
32	20	25	25	Accepted	Fair
33	20	25	25	Accepted	Fair
34	25	20	25	Accepted	Fear of Rejection
35	25	25	25	Accepted	Fear of Rejection
36	25	25	20	Rejected	Fear of Rejection
37	20	50	25	Accepted	Fair
38	25	25	25	Accepted	Fear of Rejection

Table 5: TEST OF SIGNIFICANCE, i.e., ARE OFFERS SIGNIFICANTLY DIFFERENT FROM PURELY SELFISH OFFERS

OVERALLMEANOFFER	22.88
Hypothesised Value	5
SE	5.646890013
t-statistic	3.166344653

Table 6: TEST FOR EQUALITY OF FAIRNESS AND FEAR OF REJECTION IN DECISION MAKING

OVERALLFAIRNESS	27.40%
Hypothesised Value	50.00%
SE =	0.058520574
Z =	-3.862351069

Table 7: TEST FOR EQUALITY OF MEANS BETWEEN SERIES

Included observations: 38

Method	**df**	**Value**	**Probability**
t-test	71	1.930975	0.0575
Anova F-statistic	(1, 71)	3.728664	0.0575

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	1	114.5558	114.5558
Within	71	2181.335	30.72302
Total	72	2295.890	31.88737

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
MALE	35	21.57143	7.452934	1.259776
FEMALE	38	24.07895	2.812920	0.456316
All	73	22.87671	5.646890	0.660918

Table 8: TEST FOR EQUALITY OF MEDIANS BETWEEN SERIES

Included observations: 38

Method	df	Value	Probability
Wilcoxon / Mann-Whitney		0.877841	0.3800
Med. Chi-square	1	4.770483	0.0290
Adj. Med. Chi-square	1	3.398325	0.0653
Kruskal-Wallis	1	0.942449	0.3316
van der Waerden	1	0.996805	0.3181

Category Statistics

Variable	Count	Median	> Overall Median	Mean Rank	Mean Score
MALE	35	25.00000	8	34.71429	-0.122622
FEMALE	38	25.00000	2	39.10526	0.075781
All	73	25.00000	10	37.00000	-0.019344

Table 9: REGRESSION RESULTS WHEN OFFERS ARE REGRESSED OVER GENDER

Dependent Variable: OFFER
Method: Least Squares
Included observations: 73

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.57143	0.936910	23.02401	0.0000
DUMMYMF	2.507519	1.298577	1.930975	0.0575

R-squared	0.049896	Mean dependent var	22.87671
Adjusted R-squared	0.036514	S.D. dependent var	5.646890
S.E. of regression	5.542835	Akaike info criterion	6.289904
Sum squared resid	2181.335	Schwarz criterion	6.352657
Log likelihood	-227.5815	F-statistic	3.728664
Durbin-Watson stat	2.088727	Prob(F-statistic)	0.057479

Table 10: TEST FOR EQUALITY OF VARIANCE BETWEEN SERIES

Included observations: 38

Method	df	Value	Probability
F-test	(37, 34)	7.020043	0.0000
Siegel-Tukey	(1, 71)	0.364897	0.5477
Bartlett	1	29.63959	0.0000
Levene	(1, 71)	33.68024	0.0000
Brown-Forsythe	(1, 71)	16.79195	0.0001

Category Statistics

Variable	Count	Std. Dev.	Mean Abs. Mean Diff.	Mean Abs. Median Diff.	Mean Tukey-Siegel Rank
MALE	35	7.452934	6.204082	5.714286	35.57143
FEMALE	38	2.812920	1.980609	1.447368	38.31579
All	73	5.646890	4.005562	3.493151	37.00000

Bartlett weighted standard deviation: 5.542835

Table 11: TEST FOR EQUALITY OF PROPORTIONS BETWEEN SERIES

FEMALEFAIRNESS	0.32
FEMALEFEAR	0.68
FEMALENO	38
MALEFAIRNESS	0.23
MALEFEAR	0.77
MALENO	35
SE =	0.103556076
Z =	0.842230106

Table 12: LOGIT MODEL WHERE ACCEPTANCE RATES ARE REGRESSED OVER OFFER (MALE)

Dependent Variable: ACCEPTANCEMALE
Method: ML - Binary Logit
Date: 06/06/04 Time: 13:05
Sample: 1 35
Included observations: 35
Convergence achieved after 5 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-6.226753	2.229092	-2.793404	0.0052
MALE	0.310377	0.100290	3.094794	0.0020

Mean dependent var	0.600000	S.D. dependent var	0.497050
S.E. of regression	0.331538	Akaike info criterion	0.882334
Sum squared resid	3.627284	Schwarz criterion	0.971211
Log likelihood	-13.44084	Hannan-Quinn criter.	0.913014
Restr. log likelihood	-23.55541	Avg. log likelihood	-0.384024
LR statistic (1 df)	20.22913	McFadden R-squared	0.429395
Probability(LR stat)	6.87E-06		
Obs with Dep=0	14	Total obs	35
Obs with Dep=1	21		

Table 13: LOGIT MODEL WHERE ACCEPTANCE RATES ARE REGRESSED OVER OFFER (FEMALE)

Dependent Variable: ACCEPTANCEFEMALE
Method: ML - Binary Logit
Included observations: 38
Convergence achieved after 4 iterations
Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-3.763791	4.147619	-0.907458	0.3642
FEMALE	0.268950	0.184757	1.455696	0.1455

Mean dependent var	0.921053	S.D. dependent var	0.273276
S.E. of regression	0.273161	Akaike info criterion	0.603601
Sum squared resid	2.686211	Schwarz criterion	0.689790
Log likelihood	-9.468417	Hannan-Quinn criter.	0.634266
Restr. log likelihood	-10.49526	Avg. log likelihood	-0.249169
LR statistic (1 df)	2.053676	McFadden R-squared	0.097838
Probability(LR stat)	0.151839		
Obs with Dep=0	3	Total obs	38
Obs with Dep=1	35		

Table 14: PROBAILITIES FOR MALES AND FEMALES OF ACCEPTING AN OFFER

Offer	Males	Females
0	0.001971961	0.022669798
5	0.009240572	0.081732202
10	0.042169121	0.254587911
15	0.172059919	0.567205585
20	0.495196898	0.834133332
25	0.822396923	0.950732073
30	0.956251223	0.986675135
35	0.990400915	0.996492923
40	0.997950948	0.999083662
45	0.99956521	0.999761036
50	0.999907859	0.999937714